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**Subject:** Thermo Featured Application Notes



## Featured Application Notes

### Simultaneous Extraction of PAHs and PCBs from Environmental Samples Using Accelerated Solvent Extraction

Polyaromatic Hydrocarbons (PAHs) and Polychlorinated Biphenyls (PCBs) are considered toxic and carcinogenic. They are classified as persistent organic pollutants (POPs). Typically, PAHs and PCBs are extracted separately, using different solvent combinations. The purpose of this Application Note is to report on the development of a single extraction method for PAHs and PCBs from mussel tissue and soil using accelerated solvent extraction. Accelerated solvent extraction has been approved for use in U.S. EPA Method 3545A.

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### Analyzing PBDEs in House Dust Samples with the Thermo Scientific TSQ Quantum XLS Ultra GC-MS/MS in EI-SRM Mode

Due to growing concerns over the health risks from constant exposure to Polybrominated diphenyl ethers (PBDEs) and the accumulation effects in the food chain, suitable analytical methods are required to quantify flame retardant compounds at low levels in a variety of matrices. In this application note, the EI-selected reaction monitoring (SRM) method is highlighted, and a short comparison is made with a NCI technique. A broad range of PBDE samples and congeners were analyzed, ranging from tri- up to deca-BDEs.

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### Fast Determination of Acrylamide in Food Samples Using Accelerated Solvent Extraction Followed by Ion Chromatography with UV or MS Detection

Acrylamide, a known genotoxic compound, was recently detected in carbohydrate-rich fried or baked food samples by a Swedish research group, Tareke, et al. The method presented here consists of a fast, automated extraction method using accelerated solvent extraction. The benefits of this method are simplicity, speed of analysis, and a degree of automation that allows the analysis of large numbers of samples with minimal labor. Results were obtained for acrylamide in french fries, potato chips, and crisp bread.

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### Extraction and Cleanup of Acrylamide in Complex Matrices Using Accelerated Solvent Extraction Followed by Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)

Acrylamide is formed during the cooking process of certain plant-based foods which are rich in carbohydrates and low in protein. Acrylamide is a known carcinogen in animals. This Application Note describes a new accelerated solvent extraction method that combines the extraction of low-levels of acrylamide from coffee and chocolate with an in-cell, solid-phase cleanup step.

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### Multi-Residue Pesticide Analysis in Herbal Products Using Accelerated Solvent Extraction with a Triple Quadrupole GC-MS/MS System

This Application Note describes the methodology used for the multi-residue pesticide analysis of herbal products using accelerated solvent extraction and gel permeation chromatography (GPC) sample preparation with detection and quantitation by the Thermo Scientific™ TSQ 8000 GC-MS/MS system.

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### EPA Method 525.2: Extraction of Semivolatile Organic Compounds from Water Using AutoTrace 280 Solid-Phase Extraction Cartridges

Traditionally, semivolatiles in drinking water have been extracted using liquid-liquid extraction techniques such as separatory funnel or continuous liquid-liquid extraction. Solid-phase extraction (SPE) is an alternative accepted extraction technique for U.S. EPA Method 525.2 which uses significantly less solvent (up to 60 mL per sample). This method in this Application Note describes the use of the Thermo Scientific™ Dionex™ AutoTrace™ 280 SPE instrument for extraction of semivolatile organic compounds from water samples.

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### Accelerated Solvent Extraction of Pesticide Residues in Food Products

In the environmental industry, accelerated solvent extraction has been compared extensively to traditional preparation techniques, and has been found to generate similar extracts in a more efficient manner. The principles of accelerated solvent extraction technology are based on conventional liquid extraction theory, so the transfer of existing solvent-based extraction processes to accelerated solvent extraction is simple. In addition, the ability to extract up to 24 samples unattended can result in a dramatic increase in laboratory efficiency.

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